UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
75 Hawthorne Street
San Francisco, CA 94105

April 18, 2016

Mr. Anthony R. Brown
Environmental Manager
Atlantic Richfield Company
4 Centerpointe Drive, LPR 4-435
La Palma, CA 90623-1066

Subject: EPA comments on Atlantic Richfield (ARC) Draft Off-Property Focused Remedial Investigation Work Plan Addendum No. 4 – Task Sampling and Analysis Plan for Fluvial Deposits Sampling in the East Fork Carson River, Leviathan Mine Site, Alpine County, California, dated January 8, 2016

Dear Mr. Brown:

The U.S. Environmental Protections Agency (EPA) has reviewed the Draft Off-Property Focused Remedial Investigation Work Plan Addendum No. 4 – Task Sampling and Analysis Plan for Fluvial Deposits Sampling in the East Fork Carson River, Leviathan Mine Site, Alpine County, California (TSAP) prepared on behalf of the Atlantic Richfield Company (ARC) by AMEC, dated January 8, 2016

This work was submitted to EPA pursuant to Administrative Order for Remedial Investigation and Feasibility Study, Leviathan Mine, Alpine County, California (CERCLA Docket No. 2008-18, June 23, 2008).

Background: On January 30, 2015 ARC submitted the EFCR SQT Technical Memorandum. On August 19, 2015 EPA provided written comments on the EFCR SQT Technical Memorandum. EPA did not agree with ARC's conclusion that the SQT data were sufficient to fully assess potential impacts of Leviathan Mine on the East Fork Carson River (EFCR). Further, EPA requested that ARC prepare a geomorphic analysis of sediment accumulation areas along the EFCR to identify areas for sampling of bed load sediment in accordance with the RI Statement of Work.

The January 8, 2016 TSAP provided by ARC is in response to EPA's August 19, 2015 request. EPA has completed its review of the January 8, 2016 TSAP and provides the following comments. The comments are provided on Appendix B to the TSAP that ARC prepared to address EPA's August 19 Comment G1 regarding the need for a geomorphic analysis of EFCR sediment; and to the TSAP prepared by ARC to describe sampling activities to characterize EFCR sediment.

EPA August 15 comment Requested: G1. Nature and Extent. *Please provide a geomorphic analysis of sediment accumulation areas along EFCR sufficient to identify bed load deposits downstream to at least the Ruhenstroth Dam site. For example, evaluate a series of aerial images made through time to identify*

those bed forms (such as point bars and longitudinal bars) that were present since 1952, and conduct field reconnaissance to confirm their presence and assess field sampling conditions. The analysis should consider EFCR both up- and downstream from areas potentially affected by Leviathan Mine. Additional characterization of the sediment accumulation areas per the RI statement of work (Section IA2 e. and f.) should be conducted to determine the impacts of Leviathan Mine on EFCR sediment.

ARC Response: ARC has provided Appendix B of the TSAP as the requested geomorphic analysis as the basis for an EFCR sediment sampling plan.

EPA Response: This comment has been partially addressed by Appendix B, EPA provides the following additional comments on Appendix B:

Investigation Areas:
The upstream investigation area shown in Figure B1 extends upstream from the immediate vicinity of the mouth of Cottonwood Creek. This is appropriate to avoid the potential effects of irrigation return flows from River Ranch. However, sampling transects along EFCR within 1 or 2 river miles upstream from Cottonwood Creek should also be included.
The downstream investigation area shown in Figure B1 begins almost one river mile downstream from the mouth of Bryant Creek. Please include the EFCR reach immediately downstream from the mouth of Bryant Creek in the downstream study area.

Section 2.3.2 Results. Terrace deposits at Ruhenstroth Dam site. Please include a more thorough description of the upper and lower terraces. For example, please evaluate additional photos to support the interpretation that upper and lower terrace deposits are present. The provided google earth image supports the presence of two terraces. An alternative interpretation is that the feature identified as the lower terrace represents material that has accumulated at the foot of the terrace due to erosion from the terrace and deposition at the foot of the terrace. ARC should conduct sufficient characterization to ensure that the material sampled represents in-situ EFCR sediment terrace deposits, and not accumulation of sediment eroded from the terrace.

Section 2.3.2 Results. Terrace deposits at Ruhenstroth Dam site: A preliminary review indicates that the transects cross a channel like form that was present in google earth imagery for 1993 and 1998. It is not clear how a terrace from the 1950s and a 1990s channel could coincide. Please provide additional evaluation and ensure that the selected transects will intercept a 1950's and later terrace deposit.

Section 2.3.2 Results. Channel Migration and Transects. It is difficult to evaluate the relationship between samples of channel fill, and samples along transects because the two types of samples are shown on separate figures. Please show the two types of samples on the same figure and verify that the channel fill and transect samples are located in close proximity to one another.

Section 3.0 Summary and Recommendations. The bullets all appear to reference the wrong figure numbers. Please provide a complete review and ensure the references to figures are accurate and complete.

Table B1: The table shows that only two images (from 2010 and 2014) were used to evaluate the upstream reach. EPA directs Atlantic Richfield to analyze and evaluate additional information

sources. For example, google earth imagery dating back to 1993 is available for the upstream reach of EFCR.

EPA has also completed its review of the TSAP; and provides the following general and specific comments:

G1: Sample Locations. Sample locations in Figure 1 do not appear to be located along EFCR in close proximity to the mouth of Bryant Creek. The figure shows that the downstream reach begins about one river mile downstream from the mouth of Bryant Creek. Comparison with Figures 2 and 3 shows that sediment samples are not to be collected within about 3 to 4 river miles downstream from the mouth of Bryant Creek. Please include sampling transects within the first mile downstream from the mouth of Bryant Creek in the sampling program.

Similarly, sample locations selected for EFCR upstream from Cottonwood Creek are about five to six river miles upstream from the mouth of Cottonwood Creek. Transect TR-42 appears to be upstream from the upstream end of the upstream reach. Please include an additional set of sample transects to the reach of EFCR about 1 to 3 miles upstream from the mouth of Cottonwood Creek.

G2: Data Quality Objectives. The Data Quality Objectives (DQO) do not mention human health risk assessment. Recreational use (white water rafting, swimming, and fishing) are all known to occur within the potentially affected EFCR reach. In addition, Washoe foraging is not prohibited along EFCR. Therefore, human exposure scenarios must be considered in development of the DQOs and sampling plan.

S1: Page 4 Last Paragraph of Section 3.0: The text mentions a focus of sampling activities on fine textured materials. However, fine textured materials are not defined. Please define what is meant by fine textured materials. And ensure that this definition and reference to fine texture material is consistent throughout the document.

S2: Page 5, Last Paragraph of Section 4.0: This paragraph is structured similar to a decision statement, however, the statements here are not included in the Appendix A DQOs. For consistency and to ensure that the DQOs will be met by data collected under the TSAP, the three problem statements from Appendix A and associated study objectives should be summarized here.

S3: Page 5, Last Paragraph of Section 4.0: The text states that if concentrations of metals in sediment are higher in the downstream reach than in the upstream reach, that some source (that may or may not be Leviathan Mine Site (LMS)) in Bryant Creek contributes to the elevated concentrations. The DQOs as developed do not provide for identification of additional sources or assessment of the relative importance of Leviathan Mine as a source. Please add a problem statement regarding assessment of the source for elevated metals in sediment. Please develop the necessary problem statement and associated DQO for a path after the data are available.

S4. Page 6, Section 5.1, Second Paragraph. The last sentence states that additional investigations would be necessary to support a conclusion that Leviathan Mine Site was the cause of increased metal concentrations in the Downstream Reach. Please provide an additional problem statement and DQO for discrimination between Leviathan Mine Site and other potential sources. Discrimination between sources can be readily achieved through geochemical fingerprinting based on the RI data set and information to be collected under this TSAP. If the current analytical suite is not believed by ARC to be sufficient to

chemically fingerprint Leviathan Mine sediment then addressing the requested problem statement would require the addition of analytes. This TSAP should be modified to address these issues.

S5. Page 6 Section 5.1, Third Paragraph. The first sentence states that the Downstream Reach extends from Bryant Creek downstream to the former Ruhenstroth Dam. This description is not consistent with Figure 1 which shows a gap of about a river mile between the mouth of Bryant Creek and the upstream end of the Downstream Reach. Please modify Figure 1 to show the Downstream Reach beginning at the mouth of Bryant Creek and extending to the Ruhenstroth Dam Site; and please add additional sample transects to sample EFCR sediment immediately downstream from the mouth of Bryant Creek.

S6. Page 11, Section 5.4, Fifth Bullet. The bullet states that one sample will be collected at each transect for grain size analysis. Table 2 shows that grain size analysis will be performed on sediment from the 0 to 0.5 foot depth. Criteria for selecting a sample for grain size analysis are not provided. Criteria for use by field staff to select a sample for grain size analysis need to be provided. For example, such criteria would address what the field sampling team members should do if the 0 to 0.5 foot depth consisted of cobbles.

S7. Page 18, Sample Collection, Second Paragraph. The last sentence states that twelve samples meet the minimum number of samples for statistical analysis recommended in ProUCL software. The actual minimum number of samples depends on the material being sampled (the material from one depth could comprise chemical sediment, clay, and sand from different locations, in this case there would be less than 12 samples of the same material from each depth), variance of the measurement of interest in the sample, and the acceptance criteria for usefulness of the data. Please include acceptance criteria for data usefulness.

S8. Page 18, Sample Collection, Third Paragraph. The first sentence states that samples for radiometric dating will be collected in separate cores from those of other samples. Please update the text to clarify that the location of the cores for radiometric dating will be one of the chemical sampling transects in each of the study areas.

S9. Page 19, Quality Control Sample Collection, First Paragraph. The text refers to Table 2 for a summary of quality control (QC) samples to be collected. Table 2 does not include reference to radiometric dating. Please include a discussion of QC for radiometric dating laboratory analysis, and provide QAPP updates with easy to track amendment numbers.

S10. Page 19, Quality Control Sample Collection, Second Paragraph. The text states that measurement quality control criteria for soil samples are included Table 2. Table 2 does not include measurement quality control criteria. Please include the measurement quality control criteria for sediment samples.

S11. Page 22, National Historic Preservation Act. The text states that if a programmatic agreement is not obtained before May 30, 2016, then NHPA consultation may not be completed in time to complete field sampling during the 2016 field season. Please consider and consult with EPA on whether sample locations within the EFCR active channel deposits may not be subject to NHPA requirements.

S12. Appendix A DQO Summary Step 4 Define Boundaries. The TSAP text notes that sampling will occur during periods of low flow and avoid periods of high river stage. Step 4 discussion of boundary limitations do not identify flow limitations. Please include mention of river stage limitation.

S12. Appendix A DQO Summary Problem Statement No. 2, Step 6 Specify Acceptance Criteria. The use of professional judgement supported by statistical methods is mentioned as part of evaluating multiple lines of evidence. Please include acceptance criteria for assessing professional judgement (for example, what confidence is acceptable as a basis for assessing the significance of statistical comparisons). Please include acceptance criteria for assessing the suitability for use of data for the identified purposes (spatial trends, exposure concentrations, etc.).

S12. Appendix A DQO Summary Problem Statement No. 3, Step 6 Specify Acceptance Criteria. The text states that comparisons will be designed once sufficient useable data sets from both reaches are obtained. Please provide the acceptance criteria for determining data sufficiency.

Please provide line by line response to these comments along with a revised Sampling Analysis plan within 30 days, and proceed with collecting samples during the 2016 field season. If you have any questions, please feel free to contact me at (415) 947-4183 or Deschambault.lynda@epa.gov.

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Sincerely,

Lynda Deschambault
Remedial Project Manager

Cc by electronic Email:

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